

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-11. Canceled.

12. (Currently Amended) A method of automatic repeat request (ARQ) in data communication between a sender and a receiver engaged in wireless communication with each other, wherein the sender is provided with an incoming data stream of a plurality of protocol data units (PDUs) and the ARQ ~~procedure-method~~ uses an acknowledgement message (ACK) and negative acknowledgement message (NACK), the method comprising the steps of:

a)-grouping of PDUs corresponding to the sender incoming data stream into a set of multiple PDUs and assigning each of the multiple PDUs a corresponding sequence number;

b)-assigning to each of the multiple PDUs a respective transmit power level value and a respective code rate value;

c)-storing each of the multiple PDUs in a memory along with ~~their-its~~ corresponding sequence number and ~~the-its~~ assigned transmit power level value and code rate value;

d)-transmitting the set of multiple PDUs simultaneously from the sender with ~~their~~ respective-the assigned transmit power level value and respective-code rate value of each of the multiple PDUs;

e)- the receiver receiving, decoding, and error checking the transmitted set of multiple PDUs, where received PDUs not considered decodeable are recognized as not correctly received;

f)- the receiver transmits to the sender ARQ feedback in the form of an ACK or NACK message, wherein the ACK or NACK message comprises information on ~~the~~ PDUs which were correctly received or ~~the~~ PDUs which were not correctly received;

g) the sender discarding from the memory the stored PDUs which were correctly received and forming a new set of PDUs comprising the PDUs which were not correctly received,

wherein the PDUs which were not correctly received in a first transmission are retransmitted in a subsequent transmission at higher respective power level values than that used in the first transmission, and

wherein the new set of PDUs also includes new PDUs from the incoming data stream, wherein the PDUs in the new set of PDUs are assigned descending power levels with regards to their sequence number so that a PDU in the new set of PDUs with a lowest sequence number is given a highest power level, and

wherein the PDUs which were not correctly received have lower sequence numbers than the new PDUs.

13. (Currently Amended) The ARQ method according to claim 12, wherein at least one of the power level values used for transmitting at least one PDU in the new set of PDUs is below an estimated noise floor.

14. (Currently Amended) A computer program product stored in directly loadable ~~into~~ a memory of a computer within each of a sender and a receiver, comprising software code, which when executed on a computer, implements the steps of claim 12 following method of automatic repeat request (ARQ) in data communication between a sender and a receiver engaged in wireless communication with each other, wherein the sender is provided with an incoming data stream of a plurality of protocol data units (PDUs) and the ARQ method uses an

acknowledgement message (ACK) and negative acknowledgement message (NACK), the method comprising the steps of:

a)-grouping of PDUs corresponding to the sender incoming data stream into a set of multiple PDUs and assigning each of the multiple PDUs a corresponding sequence number;

b)-assigning to each of the multiple PDUs a respective transmit power level value and a respective code rate value;

c)-storing each of the multiple PDUs in a memory along with its corresponding sequence number and its assigned transmit power level value and code rate value;

d)-transmitting the set of multiple PDUs simultaneously from the sender with the assigned transmit power level value and code rate value of each of the multiple PDUs;

e)- the receiver receiving, decoding, and error checking the transmitted set of multiple PDUs, where received PDUs not considered decodeable are recognized as not correctly received;

f)- the receiver transmits to the sender ARQ feedback in the form of an ACK or NACK message, wherein the ACK or NACK message comprises information on PDUs which were correctly received or PDUs which were not correctly received;

g) the sender discarding from the memory the stored PDUs which were correctly received and forming a new set of PDUs comprising the PDUs which were not correctly received,

wherein the PDUs which were not correctly received in a first transmission are retransmitted in a subsequent transmission at higher respective power level values than that used in the first transmission, and

wherein the new set of PDUs also includes new PDUs from the incoming data stream,

wherein the PDUs in the new set of PDUs are assigned descending power levels with regards to their sequence number so that a PDU in the new set of PDUs with a lowest sequence number is given a highest power level, and
wherein the PDUs which were not correctly received have lower sequence numbers than the new PDUs.

15. (Currently Amended) A computer program product stored on a computer-usable medium, comprising a readable program which when executed on a computer, ~~implements~~ causes a computer processor within each of a sender and a receiver, to execute the ~~steps of claim 12~~following method of automatic repeat request (ARQ) in data communication between a sender and a receiver engaged in wireless communication with each other, wherein the sender is provided with an incoming data stream of a plurality of protocol data units (PDUs) and the ARQ method uses an acknowledgement message (ACK) and negative acknowledgement message (NACK), the method comprising the steps of:

a)-grouping of PDUs corresponding to the sender incoming data stream into a set of multiple PDUs and assigning each of the multiple PDUs a corresponding sequence number;

b)-assigning to each of the multiple PDUs a respective transmit power level value and a respective code rate value;

c)-storing each of the multiple PDUs in a memory along with its corresponding sequence number and its assigned transmit power level value and code rate value;

d)-transmitting the set of multiple PDUs simultaneously from the sender with the assigned transmit power level value and code rate value of each of the multiple PDUs;

e)- the receiver receiving, decoding, and error checking the transmitted set of multiple PDUs, where received PDUs not considered decodeable are recognized as not correctly received;

f)- the receiver transmits to the sender ARQ feedback in the form of an ACK or NACK message, wherein the ACK or NACK message comprises information on PDUs which were correctly received or PDUs which were not correctly received;

g) the sender discarding from the memory the stored PDUs which were correctly received and forming a new set of PDUs comprising the PDUs which were not correctly received,

wherein the PDUs which were not correctly received in a first transmission are retransmitted in a subsequent transmission at higher respective power level values than that used in the first transmission, and

wherein the new set of PDUs also includes new PDUs from the incoming data stream,

wherein the PDUs in the new set of PDUs are assigned descending power levels with regards to their sequence number so that a PDU in the new set of PDUs with a lowest sequence number is given a highest power level, and

wherein the PDUs which were not correctly received have lower sequence numbers than the new PDUs.

16. (Currently Amended) A system of at least one sender and at least one receiver configured to be engaged in mutual wireless data communication, the system using automatic repeat request (ARQ), an acknowledgement message (ACK), and a negative acknowledgement message (NACK) in the data communication, wherein the sender is provided with an incoming data stream of a plurality of protocol data units (PDUs), the sender comprising:

-grouping means for grouping PDUs so that a number of PDUs ~~from the corresponding~~ to the sender incoming data stream are grouped into a set of multiple PDUs, and each of the multiple PDUs ~~are is~~ given a sequence number, n , and assigning transmit power and code rate to each of the multiple PDUs so that each of the multiple PDUs is assigned a transmit power level value and a code rate value, ~~which wherein said~~ grouping means is arranged to receive an ARQ feedback;

-storing means arranged to be accessible from said grouping means and to store each of the multiple PDUs along with ~~their its~~ corresponding sequence number, ~~and the~~ assigned transmit power level value, and/or and code rate value;

-transmitting means for transmitting the set of multiple PDUs so that each of the multiple ~~the PDUs of the set of PDUs are is~~ essentially simultaneously transmitted from the sender with ~~their respective its corresponding~~ power level value and code rate value;

-discarding means, arranged to be accessible from said grouping means, for discarding PDUs from memory which were correctly received, and forming a new set of PDUs comprising the PDUs which were not correctly received,

and the receiver comprising:

-means for receiving, decoding, and checking the transmitted set of multiple PDUs for errors, and recognizing one or more of those PDUs which are not considered decodeable as not correctly received;

-feedback means for feeding back to the sender an ACK or NACK message, wherein the ACK or NACK message comprises information on the PDUs which were correctly received or the PDUs which were not correctly received,

wherein the PDUs which were not correctly received in a first transmission are in a subsequent transmission retransmitted at higher respective power level values than used in the first transmission,

wherein the new set of PDUs also includes new PDUs from the incoming data stream and the PDUs in the new set of PDUs are assigned descending power levels with regards to their corresponding sequence number so that a PDU in the new set of PDUs with a lowest sequence number is given a highest power level value, and

wherein the PDUs which were not correctly received have lower sequence numbers than the PDUs in the new set of PDUs.

17. (Currently Amended) A radio communication device for data communication by transmitting a plurality of protocol data units (PDUs) with the use of an automatic repeat request (ARQ) protocol, an acknowledgement message (ACK), and a negative acknowledgement message (NACK), the radio communication device comprising:

a transmitter unit comprising:

- grouping circuitry arranged to group PDUs in an incoming data stream into a set of multiple PDUs and to assign each of the multiple PDUs ~~PDU~~ in the set a sequence number, a transmit power value, and a code rate value, and to receive an ARQ feedback signal;

- a memory, accessible from said grouping circuitry, arranged to store each of the multiple PDUs ~~PDU~~ in the set along with its corresponding sequence number, power level value, and code rate value,

- a transmitter for simultaneously transmitting ~~PDUs in the set of~~ multiple PDUs ~~along with their~~ the corresponding power level value and code rate value of each of the multiple PDUs;

- discarding circuitry, accessible from said grouping circuitry, arranged to discard from memory stored PDUs which were correctly received and to form a new set of PDUs comprising the PDUs which were not correctly received along with new PDUs from the incoming data stream,

wherein the PDUs which are not correctly received in a first transmission are in a subsequent transmission retransmitted at higher respective power level values than used in the first transmission,

wherein the PDUs in the new set of PDUs are assigned descending power levels with regards to their sequence number so that a PDU in the new set of PDUs with a lowest sequence number is given a highest power level value, and

wherein the PDUs which were not correctly received have lower sequence numbers than the new PDUs.

18. (Currently Amended) A radio communication device according to claim 17, further comprising a receiving unit comprising:

- circuitry for receiving, decoding, and checking the transmitted set of multiple PDUs for errors and for recognizing one or more of those PDUs which ~~are~~ are not considered decodeable as not correctly received, and for feeding back to the sender an ACK or NACK message, wherein the ACK or NACK message comprises information on the PDUs which were correctly received or the PDUs which were not correctly received.

19. (Previously Presented) A radio communication device according to claim 17, wherein the radio communication device is a mobile terminal for use in a cellular radio communication system.

20. (Previously Presented) A radio communication device according to claim 17, wherein the radio communication device is a radio base station for use in a cellular radio communication system.